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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/727,742

12/04/2003

Pierre Fazan

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EXAMINER

MAI, SON LUU

ART UNIT

PAPER NUMBER

2818

DATE MAILED: 06/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/727,742	Applicant(s) FAZAN ET AL.	
	Examiner Son L. Mai	Art Unit 2818	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12-04-03, 03-15-04 and 04-30-04.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 28-60 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 28-60 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 December 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☒ Certified copies of the priority documents have been received in Application No. 10/450,238.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>03-15-04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The preliminary amendment filed 12-04-03 has been entered. Accordingly, claims 28-60 are presented for examination.

Drawings

2. The drawings are objected to because the following deficiencies:

In figure 5a, the reference numerals 12, 24, 26, 20, do not agree with the description in the specification.

In figure 6a, the reference numerals 18, 26, 232 do not agree with the description in the specification.

In figure 7a, the reference numeral "230" indicating an interface is not included.

In figures 7c and 7d, numerous errors as in figure 5a are found.

In figure 18, the word "Schematic" should be --Schematic--.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

3. Claims 28, 37 and 47 are objected to because of the following informalities:

In claim 28, lines 3 and 4, the words "include" should be --includes--.

In claim 37, lines 3 and 4, the words "include" should be --includes--.

In claim 47, line 4, the word "include" should be --includes--. Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 33-36, 43-46, 50-53, and 57-60 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 33 recites the limitation "a control unit" in line 1. It appears that this control unit is the same as the unit in claim 32. Since claim 33 is dependent upon claim 32, "a control unit" should read --the control unit--.

Claims 34-36 are rejected for depending upon claim 33.

In claim 43, the recitation "a control unit" should be --the control unit--for the same reasons as in the above rejected claim 33.

Claims 44-46 are rejected for depending upon claim 43.

In claim 50, the recitation "the second write control signal set" lacks strict antecedent basis and what is the first write control signal set?

In claim 51, the recitations "the first positive voltage" and "the second positive voltage" lack strict antecedent bases. And it is not clear if there exists an embodiment with the first and second positive voltages as claimed.

Claims 51-53 are rejected for depending upon claim 50.

In claim 57, the recitation "a control unit" should be —the control unit—for the same reasons as in the above rejected claim 33.

Claims 58-60 are rejected for depending upon claim 57.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 28-33, 37-43, 47-50, and 54-57 are rejected under 35 U.S.C. 102(b) as being anticipated by Hamano et al. (U.S. Patent 4,298,962) hereinafter referred to as "Hamano".

Regarding claim 28, Hamano teaches a semiconductor memory array (fig. 7) comprising: a plurality of memory cells (M) arranged in a matrix of rows and columns, the plurality of memory cells includes a first memory cell (M11) and a second memory cell (M22), wherein the first and second memory cells each includes at least a transistor to constitute the memory cell and wherein the transistor includes: a source region (203 in fig. 6); a drain region (204); a body region (209) disposed between and adjacent to the source region and the drain region, wherein the body region is an electrically floating state; and a gate (208) disposed over the body region; wherein each memory cell includes: a first data state representative of a first charge in the body region (fig. 9A and column 8, lines 36-46); and a second data state representative of a second charge in

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the body region wherein the second charge is substantially provided by removing charge from the body region through the source region (fig. 9D and column 9, lines 14-28); and wherein the gate of the first memory cell and the gate of the second memory cell are connected (figure 7 of Hamano shows the gates of memory cells M11 and M22 connected.)

Regarding claim 29, the third and fourth memory cells are shown as cells M21 and M12 respectively in figure 7 of Hamano. The source region of the first memory cell M11 and the source region of the third memory cell M21 are the same region wherein the drain region of the first memory cell M11 and the drain region of the fourth memory cell M12 are the same region.

Regarding claim 30, figure 9A (and related text) of Hamano teaches that the first charge is comprised of an accumulation of majority carriers (positive holes) in the body region.

Regarding claim 31, Hamano shows in figure 9B, the majority carriers (positive holes) accumulate in a portion of the body regions that is adjacent to the source regions (203').

Regarding claim 32, Hamano teaches at column 8, lines 36-64, a control unit, coupled to the gate and the drain region of the first memory cell, to provide control signals to the first and second memory cells, wherein the first memory cell, in response to a first write control signal set, stores the first charge in the body region.

Regarding claim 33, Hamano teaches at column 9, lines 11-50, a control unit, coupled to the gate and the drain region of the first memory cell, to provide control

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signals to the first and second memory cells, wherein the first memory cell, in response to a second write control signal set, stores the second charge in the body region by removing charge from the body region of the first memory cell through its source region.

Since the remaining claims 37-43, 47-50, and 54-57 recite substantially the limitations of claims 28-33, they are rejected under 35 U.S.C. 102(b) as being anticipated by Hamano et al. (U.S. Patent 4,298,962).

Allowable Subject Matter

8. Claims 34-36, 44-46, 51-53 and 58-60 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The prior art of record fails to teach or suggest at least the control unit of claims 33 for applying positive voltages to the drain region and gate of the first memory cell to provide the second charge in the body region.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Lee (U.S. Patent 5,164,805), Kalnitsky, Alexander (U.S. Patent US 5608250 A), King, Tsu-Jae et al. (U.S. Patent US 6479862 B1), and Burnett, James

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D. et al. (U.S. Patent US 6714436 B1) teach transistors employed their body regions as storage means for data retention.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Son L. Mai whose telephone number is 571-272-1786.

The examiner can normally be reached on 8am to 6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on 571-272-1787. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

05-30-04



Son L. Mai
Primary Examiner
Art Unit 2818